

## **REMARKS/ARGUMENTS**

### **I. General Remarks**

Please consider the application in view of the following remarks.

### **II. Disposition of Claims**

Claims 1-79 are pending in this application. Claims 38-56 and 62-79 were withdrawn by the Examiner as non-elected claims following his restriction requirement.

### **III. Election/Restrictions**

The Examiner has divided the pending claims into four groups and required restriction as to one. The Examiner has advised that in a telephone conversation with Craig Roddy on June 1, 2006, Mr. Roddy provisionally elected, with traverse, the claims in Group I for prosecution. The Examiner has required affirmation of this election and Applicant hereby makes that affirmation. Group I has claims 1-37 and 57-61. The Examiner has withdrawn claims 38-56 and 62-79 and these withdrawals are reflected in the above amendment to the claims.

### **IV. Specification**

The Examiner has noted that trademarks ACCOLADE™, PETROFREE®, ALCOSPERSE®747, ALCOQUEST®747, ALCOGUM®, and EXP 3833™ were used in the specification at pages 9, 10 and 17. The Examiner has advised that each trademark “should be capitalized wherever it appears **and be accompanied by the generic terminology.**” The Examiner has objected to Applicant’s use of trademarks in the specification because he does not consider the specification to disclose the generic description of these six trademarks. The Examiner has required correction.

Applicant has submitted amended paragraphs herein.

## **V. Double Patenting**

The Examiner has provisionally rejected claims 1-13, 18, 20-27, 31-37, and 57-61 on the ground of nonstatutory double patenting over claims 1-13, 22-29, 33, 36-41, and 63-66 of copending Application No. 10/799,810. Applicant respectfully traverses this rejection but has submitted a terminal disclaimer herewith to expeditiously overcome this rejection.

## **VI. Claim Rejections—Claims 1-37, 57, and 59-61**

The Examiner has rejected claims 1-37, 57 and 59-61 under 35 U.S.C. 103(a) as obvious from U.S. Patent No. 5,990,050 to Patel in view of “Amphiphilic Copolymers,” Langmuir 1998, 14, 5977-79 (Perrin). Specifically, the Examiner has stated that “Patel discloses a drilling/working fluid, to be used in a subterranean formation, having an invert emulsion fluid that includes an oleaginous fluid (continuous phase) having an oil and an oil-soluble glycol ether that can be miscible in oil but only 10% miscible in water, a non-oleaginous fluid, and an emulsifier to stabilize the invert emulsion.” Further, the Examiner states that “Patel lists a series of emulsifiers (e.g. VERSACOAT®) followed by an alternate, separate list of surfactants, which can be instead used to produce or stabilize the invert-emulsion. Thus Patel does not require that the invert emulsion contain a surfactant.”

The Examiner then admits that “Patel does not disclose the emulsifier to be a polymeric emulsifier having hydrophilic and hydrophobic moieties.” However, the Examiner states that “Perrin teaches the use of a polymeric emulsifier to produce a rapid formation of a crystalline array of micrometer oil cells surrounded by a thin layer of aqueous polymer solution using a simple shear in-situ emulsification procedure.” The Examiner concludes it would have been obvious to one skilled in the art to use the Perrin amphiphilic polymer in Patel’s drilling fluid.

Applicant respectfully traverses this rejection by the Examiner. When read in its entirety, Patel teaches a drilling fluid having a preferentially oil-soluble glycol ether--not other types of oleaginous fluids--in the continuous phase of the drilling fluid and an emulsifying agent. Applicant believes that the portion of the Patel disclosure cited by the Examiner in column 5—referring for example to VERSA-COAT and then to other chemicals—is intended to distinguish commercial surfactants available from the assignee of the patent M-I, L.L.C. from commercial surfactants available from another company, Union Carbide Chemical Company, Inc., rather than to indicate two different types of emulsifiers. Contrary to the representation of the Examiner, Patel specifically states at column 8, lines 14-15, that VERSA-COAT is a “surfactant package.” And Patel states at column 7, lines 2-3 that VERSA-WET is “an oxidized crude oil wetting agent.” By definition, a wetting agent is a surfactant. (See Hawley’s Condensed Chemical Dictionary, 11<sup>th</sup> ed., “wetting agent. A surface-active agent which, when added to water causes it to penetrate more easily into, or to spread over the surface of another material by reducing the surface tension of the water.”). NOVAMUL is also understood by those skilled in the art to be a surfactant. All of the drilling fluid formulations provided in the examples in Patel include surfactants—either VERSA-COAT and VERSA-WET or NOVAMUL and VERSA-WET. The Kokal reference cited by the Examiner, entitled “Crude Oil Emulsions: A State-Of-The-Art Review,” (emphasis added), and dated in 2002, after Patel, simply equates emulsifiers with “surface active agents or surfactants.” Kokal Page 2, first column (“Emulsions are stabilized by emulsifiers (surface active agents or surfactants)”).

In distinct contrast, Applicant teaches away from using surfactants as emulsion stabilizers. There is no commonality between Patel and Applicant on which to base an obviousness rejection. Certainly there is no suggestion in Patel for combining its teaching with

Perrin, and even with such combination, one would not have Applicant's invention without Applicant's teachings. There is insufficient teaching in Perrin to conclude the copolymer emulsion stabilizers taught therein may be useful in the application taught by Applicant. And as previously noted, Patel is limited to glycol ethers. Applicant's invention is useful with many different oleaginous fluids.

Further with respect to Perrin, Applicant respectfully submits that the Examiner has even improperly cited this reference as analogous prior art. For an examiner to rely on a reference under 35 U.S.C. 103, the MPEP dictates at § 2141.01(a) that, the reference "must be analogous prior art." According to the Federal Circuit, "Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Clay*, 966 F.2d 656, 659, 23 U.S.P.Q.2d 1058, 1060-61 (Fed. Cir. 1992), citing *In re Deminski*, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979). The Perrin reference clearly is not "from the same field of endeavor" as Applicants' invention. Perrin is concerned with developing materials with "pore diameters comparable to optical wavelengths" for use with "phototonic band-gaps and optical stop-bands." Perrin Page 5977, 1<sup>st</sup> column.

The Federal Circuit has stated that:

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the

reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it.

*In re Clay*, 966 F.2d 656, 659, 23 U.S.P.Q.2d 1058, 1060-61 (Fed. Cir. 1992); *also see In re Oetiker*, 977 F.2d 1443, 1446, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992); MPEP § 2131.01(a).

The Federal Circuit has stated further that:

Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider 'the reality of the circumstances', *In re Wood*, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) -- in other words, common sense -- in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.

*In re Oetiker*, 977 F.2d 1443, 1446, 24 U.S.P.Q.2d 1443, 1445 (Fed. Cir. 1992).

Applicant respectfully submits that the Examiner has not shown that a person of ordinary skill, seeking to solve a problem of stabilizing an invert emulsion used in oil field applications, would reasonably be expected or motivated to look at methods for preparing "ordered monodisperse emulsions" or "methods to create a porous three-dimensional periodic solid with pore diameters smaller than approximately 40nm or comparable to optical wavelengths" as taught in Perrin. Although Applicant disputes that combining the teachings of Perrin with Patel would result in Applicant's invention, even assuming for the sake of argument, or *arguendo*, that it did, in the words of the Federal Circuit: "The combination of elements from nonanalogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness. There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself." *In re Oetiker*, 977 F.2d 1443, 1446, 24 U.S.P.Q.2d 1443, 1445

(Fed. Cir. 1992)(emphasis added), *citing Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); *In re Geiger*, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

Moreover, as previously noted, even if the combination of Patel and Perrin were suggested, such combination would fail to suggest or render obvious Applicants' invention. To explain further, Applicant's invention is directed to a method of drilling a well bore or treating a subterranean formation employing a surfactant-free emulsion comprising an oleaginous fluid, a fluid that is at least partially immiscible with the oleaginous fluid, and a non-surfactant polymeric emulsifier having hydrophilic moieties and hydrophobic moieties as an emulsion stabilizer.

Perrin on the other hand is concerned with a method of using a polymeric emulsifier to rapidly form a crystalline array of oil cells surrounded by a thin layer of aqueous polymer solution for a highly ordered macroporous material with uniform pore size of a micrometer scale for technological use as photonic band-gaps and optical stop-bands. Perrin claims its emulsifier is "one of the most appropriate for the direct production of monodisperse emulsions." Page 5979, 2<sup>nd</sup> column. Perrin is not concerned with improving emulsion stability or using a polymer emulsifier as an emulsion stabilizing agent. Rather Perrin states on page 5979, 1<sup>st</sup> and 2<sup>nd</sup> column:

In general, the oil-water-hydrophobically modified poly-(sodium acrylate) system described here thus represents only a special case of a more general category of structuring molecules that could be used under suitable conditions to produce ordered monodisperse macroemulsions regardless of oil or emulsion type. As an example, we believe that this important step toward the design of efficient unconventional, nonpolluting emulsifiers could be extended without major difficulty to the case of biodegradable long molecules (modified natural polymers an example) in order to broaden the field of applications.

This experiment also gives unexpected striking evidence of the higher emulsifying potential of macromolecules over small-molecule surfactants even under packing constraints since the polymer chains are confined in the thin water layer separating oil droplets (Figure 2B) At the present time, the structure of the liquid film protecting the droplets from coalescence is still unknown. Nevertheless, recent studies have clearly demonstrated the exceptional resistance of the film to breaking. Qualitatively, the arrangement of the polymer chains in the interstitial phase, suggested in Figure 3, is certainly a reasonable model. Note that there is no attempt within this simple description (Figure 3) to give any quantitative information regarding the morphology of the aqueous phase (examples are the density of hydrophobic aggregates in the film or surfaces occupied by grafts at interfaces). Following the same idea, this work also provides a convenient model system for fundamental studies of copolymer adsorption at liquid-liquid interfaces. (emphasis added)

Thus, while Perrin mentions the “exceptional resistance” of the film to breaking, such resistance is not quantified or characterized and thus cannot provide useful information for any oil field applications.

#### **VII. Claim Rejection—Claim 58**

The Examiner has rejected claim 58 under 35 U.S.C. 103(a) as obvious from Patel in view of Perrin, as discussed in rejecting the other pending claims, and further in view of “Crude Oil Emulsions: A State of the Art Review,” SPE 77497 (Kokal). Specifically, the Examiner applied Patel and Perrin to claim 58 as with the other claims. The Examiner then added that, while neither Patel nor Perrin explicitly discloses adding a breaker to drilling fluid, “Kokal teaches that demulsification is the separation of an emulsion into its component phases to usually provide an aqueous component and an oil-phase component containing the desired hydrocarbon oil” and that “chemical demulsification . . . is the most common method of emulsion treatment.” The Examiner then concluded that, “it would have been obvious to a person of ordinary skill in the art, at the time that the invention was made, to include a breaker step in Patel and Perrin’s method of drilling/treating a subterranean formation comprising subsequently adding a chemical demulsifier to the invert-emulsion.” He stated further that, “It would have been obvious to one

skilled in the art to do so to be able to effectively attain/produce crude oil, with lower amount of water contamination, as taught by Kokal.”

Applicant respectfully traverses this rejection by the Examiner for the same reasons stated above in traversing the Examiner’s rejection of the other claims. Further, Applicant respectfully traverses this rejection by respectfully submitting that the Examiner has misapplied Kokal to Applicant’s claim 58. Kokal is directed to problems related to crude oil emulsions of the type that form during production, and particularly to “produced oilfield emulsions at the well head and at the wet crude handling facilities.” Page 1, 2<sup>nd</sup> column. Such emulsions typically form naturally between the oil and the water mixed with the oil being produced. These emulsions are undesirable and their stability is similarly not desired.

Applicant’s invention, on the other hand, concerns emulsion based drilling and well treatment fluids especially formulated for use in drilling and treating a wellbore. These emulsions are purposely synthesized for specific use in the drilling and well treating operations. Applicant’s claim 58 is directed to a method of fracturing a subterranean formation. Applicant’s surfactant free emulsion facilitates placement of proppant particulates into the subterranean formation at a pressure sufficient to create or enhance a fracture in the formation. One skilled in the art readily understands that removal of the emulsion, as facilitated by the emulsion breaker, after such proppant placement and fracturing enhances production from the subterranean formation. Such removal is not to “effectively attain/produce crude oil, with lower amount of water contamination, as taught by Kokal” as stated by the Examiner.

Applicant teaches in paragraph [0027] of his specification that advantageously “not only are the emulsions of the invention typically more stable than traditional surfactant stabilized emulsions, but they are more controllably and easily broken when desired. . . .” Since the



emulsions discussed in Kokal are not synthetically and purposely created, the Kokal teaching respecting breaking the crude oil emulsions discussed therein seems inapplicable to this aspect of Applicant's invention.

### **SUMMARY**

Applicant acknowledges the apparent care that the Examiner has given his review of their application, citing his rejections with his reasoning and explanations over 10 pages in his office action. However, Applicant respectfully traverses the Examiner's rejections under 35 U.S.C. §103, submitting that even if one combined the teachings of Patel with Perrin or of Patel with Perrin and Kokal, one would still not have the benefit of Applicant's invention without Applicant's teachings.

The Federal Circuit has dictated that **the prior art must provide a motivation or reason for the worker in the art, without the benefit of the applicant's specification, to make the necessary changes to reach applicant's invention.** *In re Jones*, 958 F.2d 347, 21 U.S.P.Q.2d 1941, 1944 (Fed. Cir. 1992); *In re Deminski*, 296 F.2d 436, 230 U.S.P.Q. 313 (Fed. Cir. 1986); *accord, Ex parte Kranz*, 19 U.S.P.Q.2d 1216, 1218 (B.P.A.I. 1990). "The motivation to combine references cannot come from the invention itself." *Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc.*, 31 F.3d 1068, 30 U.S.P.Q.2d 1377 (Fed. Cir. 1993). (Fed. Cir. 1986). Applicant respectfully submits that the Examiner has failed to cite such motivation leading to Applicant's invention. **The Examiner has provided no basis or support in the references themselves for combining the references.** "Absent such a suggestion to combine the references, [one] can do no more than piece the invention together using the patented invention as a template." *Texas Instruments Inc. v. U.S. Int'l Trade Comm'n*, 988 F.2d 1165, 26 USPQ2d 1018 (Fed. Cir. 1993) (emphasis added).

A basic issue is whether the applied references suggest the claimed invention as a solution to the specific problem solved by Applicant's invention. *Lindemann Maschinenfabrik GmbH v. American Hoist and Derrick Co.*, 730 F.2d 1452, 221 U.S.P.Q. 481 (Fed. Cir. 1984). Focusing on the obviousness of substitutions and differences, as Applicant respectfully submits the Examiner has done here, instead of on the invention as a whole, is a legally improper way to simplify the difficult determination of obviousness. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q. 81, 93 (Fed. Cir. 1976). When prior-art references require a selective combination to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination. *Uniroyal Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 U.S.P.Q.2d 1434 (Fed. Cir. 1988).

Applicant disputes that his invention may be obtained merely from combining elements from Patel and Perrin (or from Patel and Perrin and Kokal). However, even if, *arguendo*, such combinations would yield Applicant's invention as claimed, the Federal Circuit has ruled that finding an invention to be merely a combination of elements known in the art at the time of the invention is insufficient basis for concluding that the invention would have been obvious. *Smiths Industries Medical Systems Inc. v. Vital Signs Inc.*, 183 F.3d 1347, 51 U.S.P.Q.2d 1415, 1420 (Fed. Cir. 1999).

The Examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed. *In re Rouffet*, 149 F.3d 1350, 47 U.S.P.Q.2d 1453, 1458 (Fed. Cir. 1998). The motivation to make a

specific structure is not abstract, but practical, and is always related to the properties or uses one skilled in the art would expect the structure to have, if made. The critical inquiry is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. *In re Newell*, 891 F.2d 899, 13 U.S.P.Q.2d 1248, 1250 (Fed. Cir. 1989). Both the suggestion and the expectation of success must be founded in the prior art, not in Applicant's disclosure. *In re Dow Chemical Co.*, 837 F.2d 469, 5 U.S.P.Q.2d 1529 (Fed. Cir., 1988). **It is the invention as a whole that must be considered in obviousness determinations.** The invention as a whole embraces the structure, its properties, and the problem it solves.

It is error to focus solely on the product created, rather than on the obviousness or non-obviousness of its creation. Thus, the question is whether what the inventor did would have been obvious to one of ordinary skill in the art attempting to solve the problem upon which the inventor was working. The problem solved by the invention is always relevant. **The entirety of a claimed invention, including the combination viewed as a whole, the elements thereof, and the properties and purpose of the invention, must be considered.** Factors, including unexpected results, new features, solution of a different problem, and novel properties, are all considerations in the determination of obviousness in terms of 35 U.S.C. § 103. . . . The requisite view of the whole invention mandates consideration of not only its structure but also its properties and the problem solved. . . .

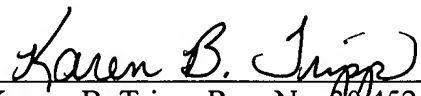
*In re Wright*, 848 F.2d 1216, 6 U.S.P.Q.2d 1959, 1961 (Fed. Cir. 1998) (emphasis added).

Applicant respectfully submits that the Examiner's conclusion that the combination of the references renders Applicant's invention obvious is erroneous. Each of the references that the Examiner cited is directed to a different problem as well as a different solution to the problem than is Applicant's invention. The references never suggest application of their teachings to stabilizing invert emulsion drilling fluids and well treatment fluids using a polymeric emulsion stabilizer or emulsifier instead of a surfactant emulsifier.

Applicant respectfully requests the Examiner reconsider his position and Applicant's claims. Applicant respectfully submits that this response is fully responsive to the Examiner's office action and Applicant respectfully requests the Examiner to allow the application to proceed to issue.

Respectfully submitted,

Date: December 15, 2006

  
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